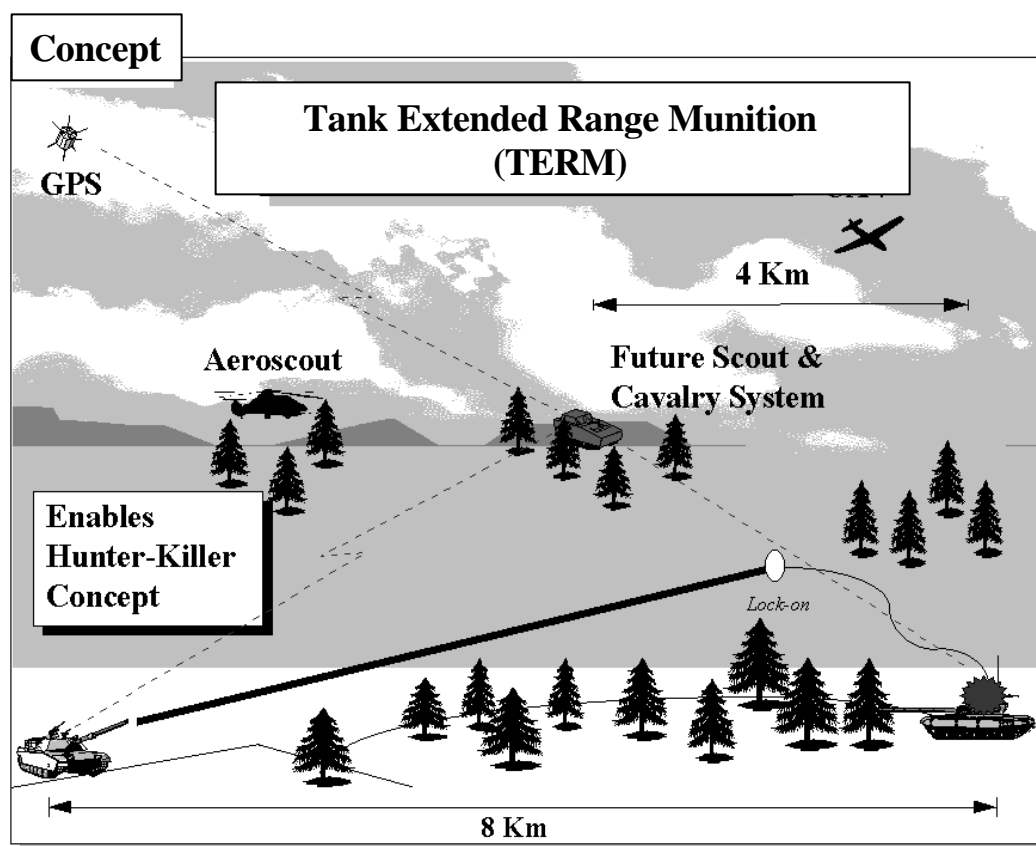


Tank Extended Range Munition (TERM)



22 June 2000

Prepared for:

**Cannon Artillery
Firepower Symposium**

Presented by:

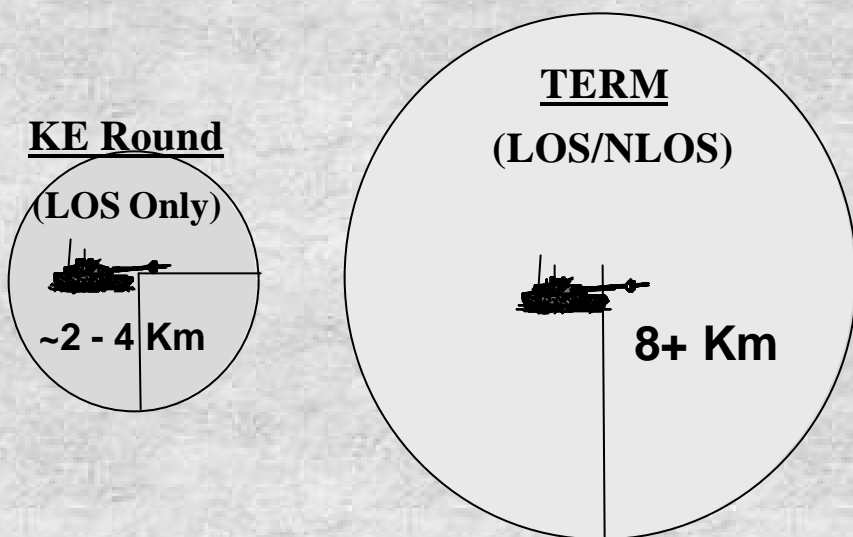
Sal Ghazi

973-724-6746

**Weapons Systems and Technology Team
ARDEC-CCAC**

Tank Extend Range Munition (TERM)

**TERM INCREASES the
Tank's BATTLESPACE~ 7 FOLD**



REQUIREMENTS

- *Provide Beyond the Line of Sight and Extended Range Line of Sight Capability in both Designated and Autonomous Modes*
- *Range: 8+ kilometers*
- *Defeats 2005-2015 threat*
- *Hard/soft kill APS resistant*
- *Unit cost < \$ 25,000*
- *Supports FCS objectives*
- *Extensively Leverages State of the Art Sensor Technologies*

- Decisive Tank Lethality to Extended Ranges Beyond 8Km -



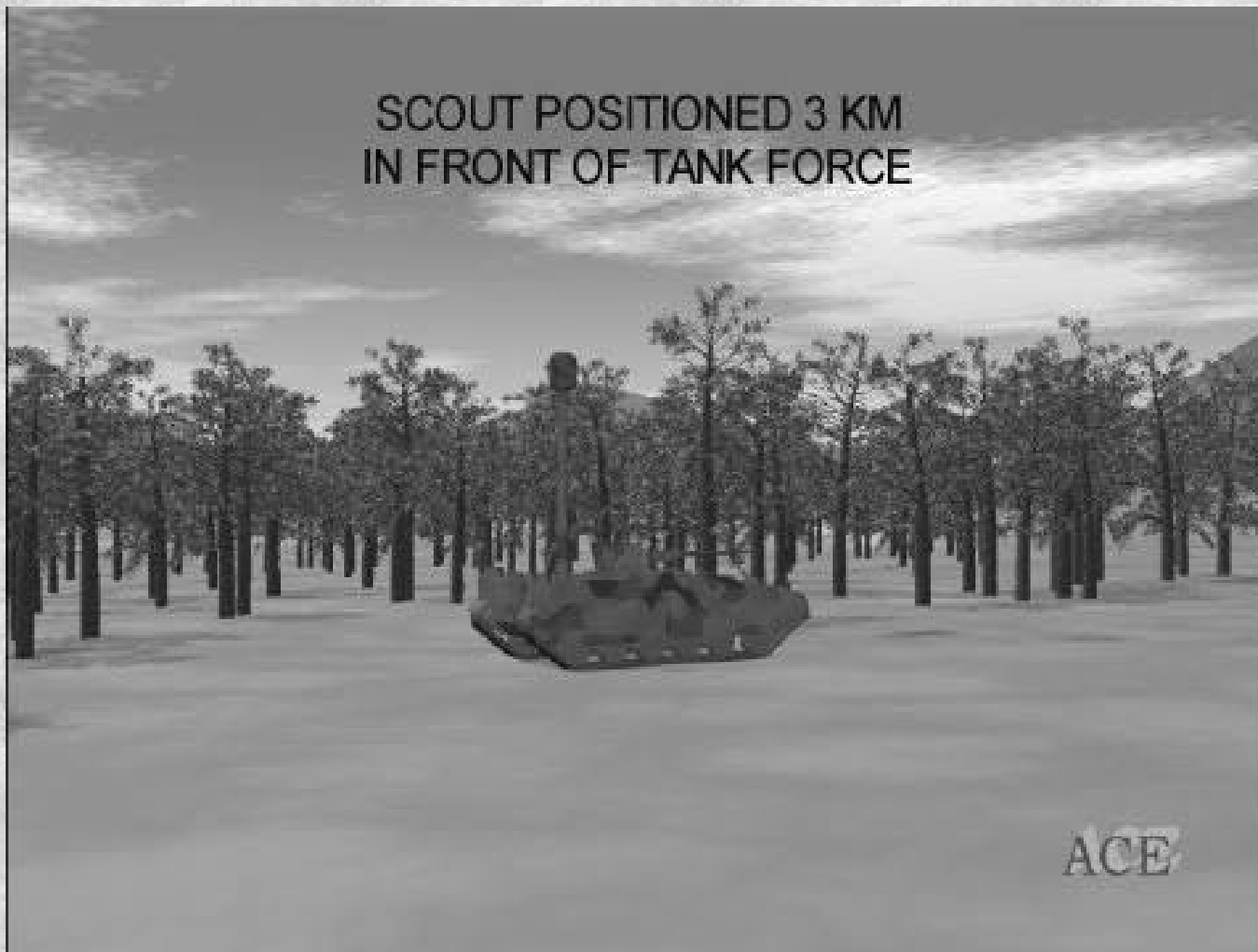
**ASB 1999 Summer Study M&S Results Showed -
TERM-Like Capabilities Single Biggest Contributor To Survivability**





TERM - "NLOS Autonomous Mission"

SCOUT POSITIONED 3 KM
IN FRONT OF TANK FORCE



ACE

TERM - Effective Against High Value Targets at Extended Ranges



ASB Summer Study Findings/Recommendations



➔ **“Because extended range and accurate tactical engagement is crucial to direct and indirect fire overmatch, concepts like GPS/INS Extended Range MLRS, TERM and EFOGM should be vigorously pursued.”**

➔ **“Tactical level situational awareness and beyond line of sight (or extended range) munitions have the highest payoff of any protection option when considered in cases where the enemy can be well identified.”**



**ASB Summer Study M&S Results Showed -
*TERM-Like Capabilities Single Biggest Contributor To Survivability***

Operational Effectiveness Assessment

- **TERM Takes Advantage of Long Range Detection and Acquisition Systems**

- **TERM...**

- **Kills Early . . . In the 5-10km Range Band**
- **Kills Faster . . . In Critical Initial Minutes of a Fight**
- **Kills More . . . Before Red Systems Can Engage**

- **TERM Improves Blue Survivability**

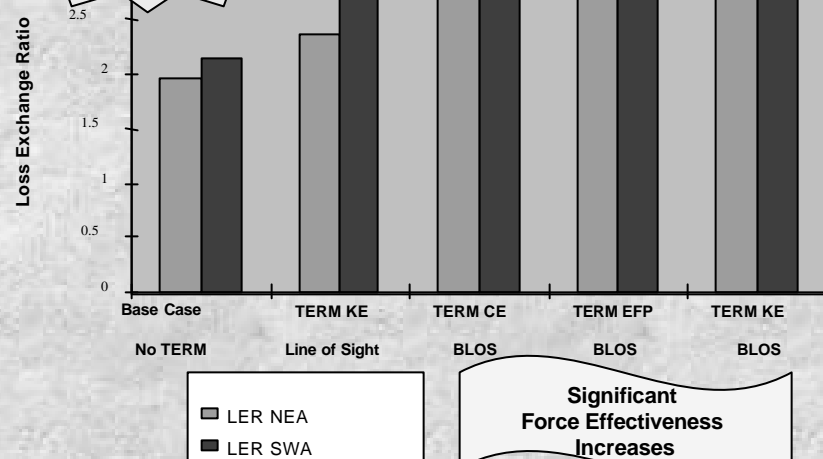


- **TERM Improves Force Effectiveness**
- **TERM Helps the Battalion Commander Retain the Initiative and Maintain Momentum**

TERM Modeling and Analysis

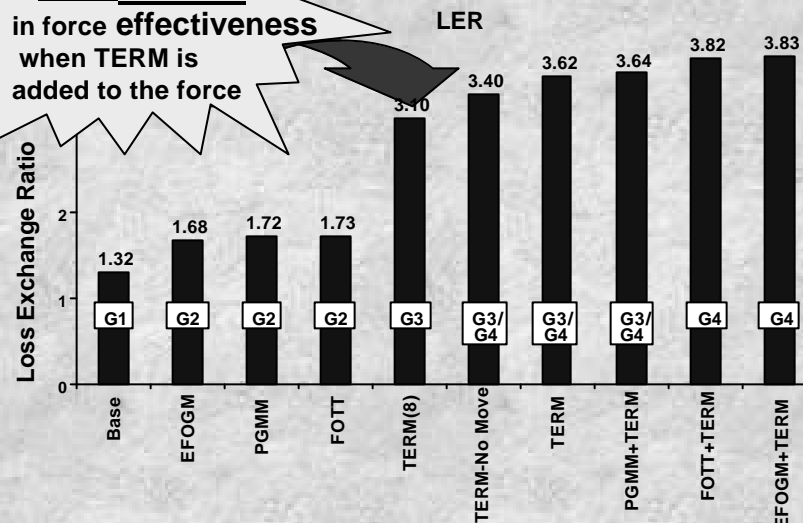
Phase I Front-End Analysis
ARL/ TRAC-WSMR

LER Increased
by 17%-58%



HRS 37 (EUR Attack) TRAC-WSMR

A 2 fold increase
in force effectiveness
when TERM is
added to the force



Groups based on Wilcoxon Rank Test
level of significance = 0.1

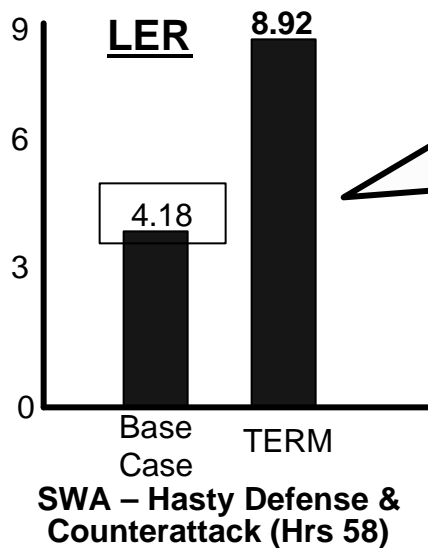
What Can We Conclude From all Analyses to Date?

- ✓ TERM candidates have an operational payoff in increased lethality at extended ranges over the base case.
- ✓ TERM increases force survivability reducing tank losses by as much as half.
- ✓ TERM analysis indicates major savings in Ammo expenditure
- ✓ TERM LOS/BLOS combined capability proved to be more effective than LOS only.

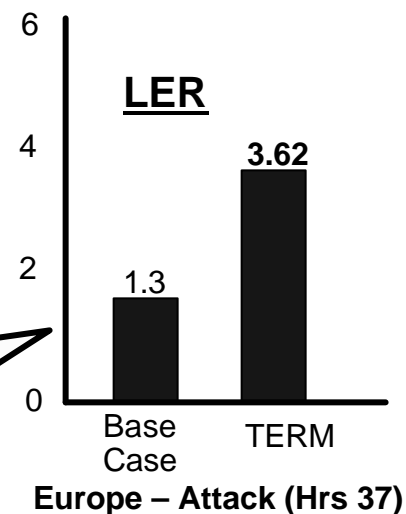
Tank Losses
Reduced
40%-63%

Tank SER
Increased by
76%-263%

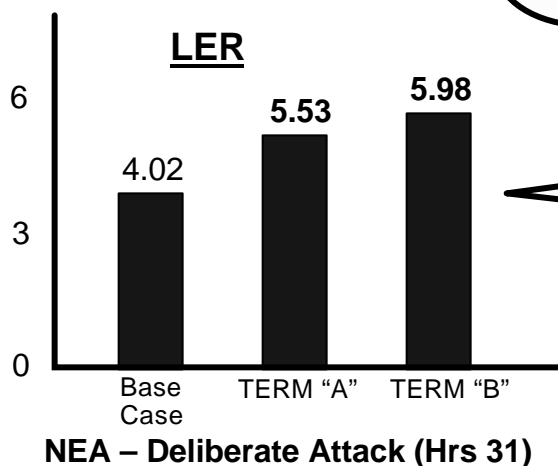
Operational Effectiveness Assessment



- 2/3 Fewer Losses Than Base Case
- TERM Doubles Force Effectiveness



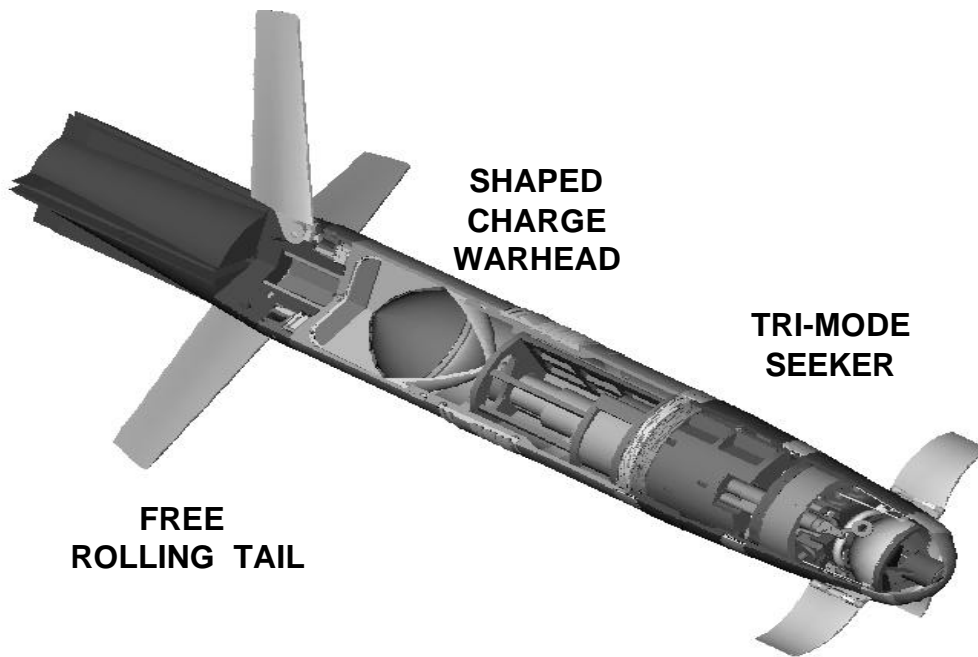
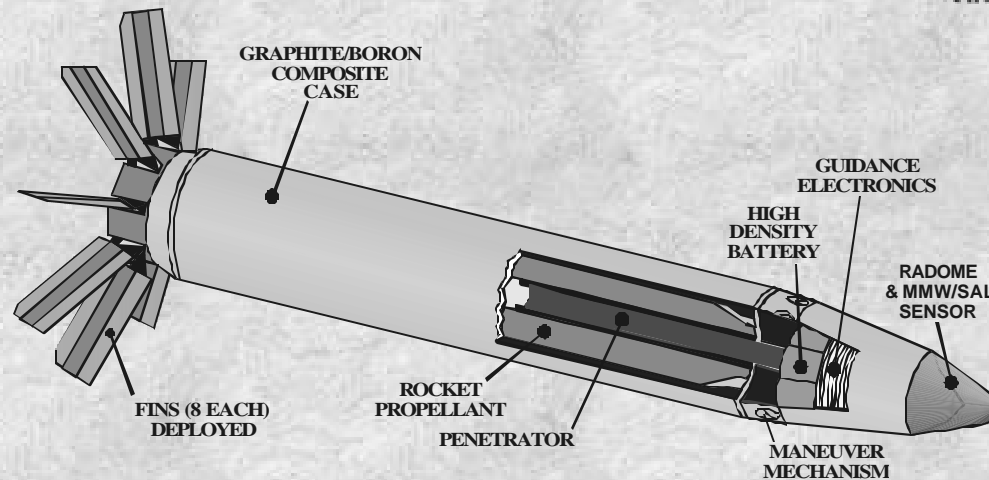
- Blue Tanks Kill 8x More Red Systems in Initial 30 Minutes
- Almost 3x Improvement in Force Effectiveness With TERM



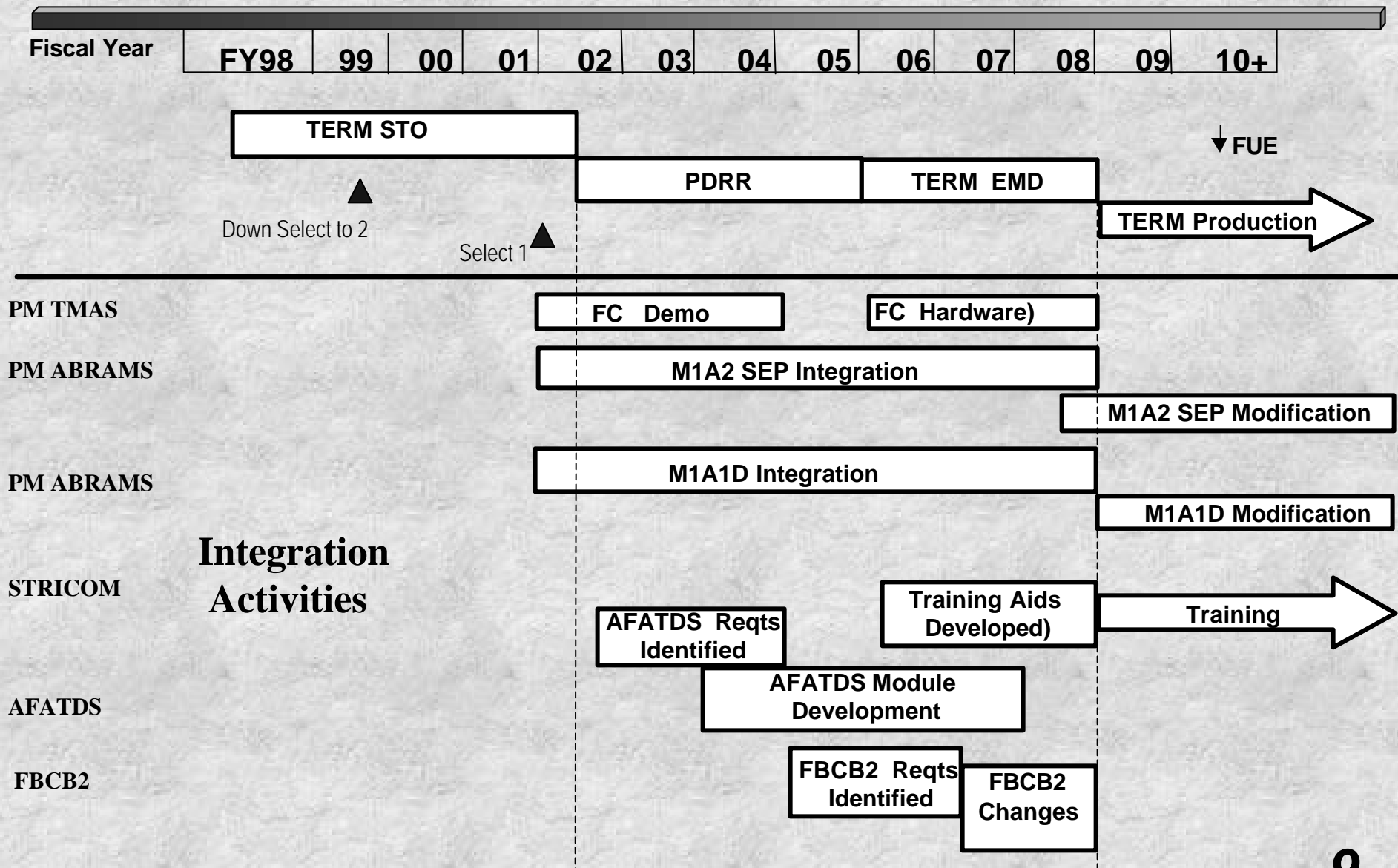
Comparison of Blue Force With Two Different TERM Rounds to Base Case Without TERM...

- In First 25 minutes:
- Blue Tanks With TERM Kill 70-90 Red Systems
 - Base Case Kills None!

COMPETING CONCEPTS

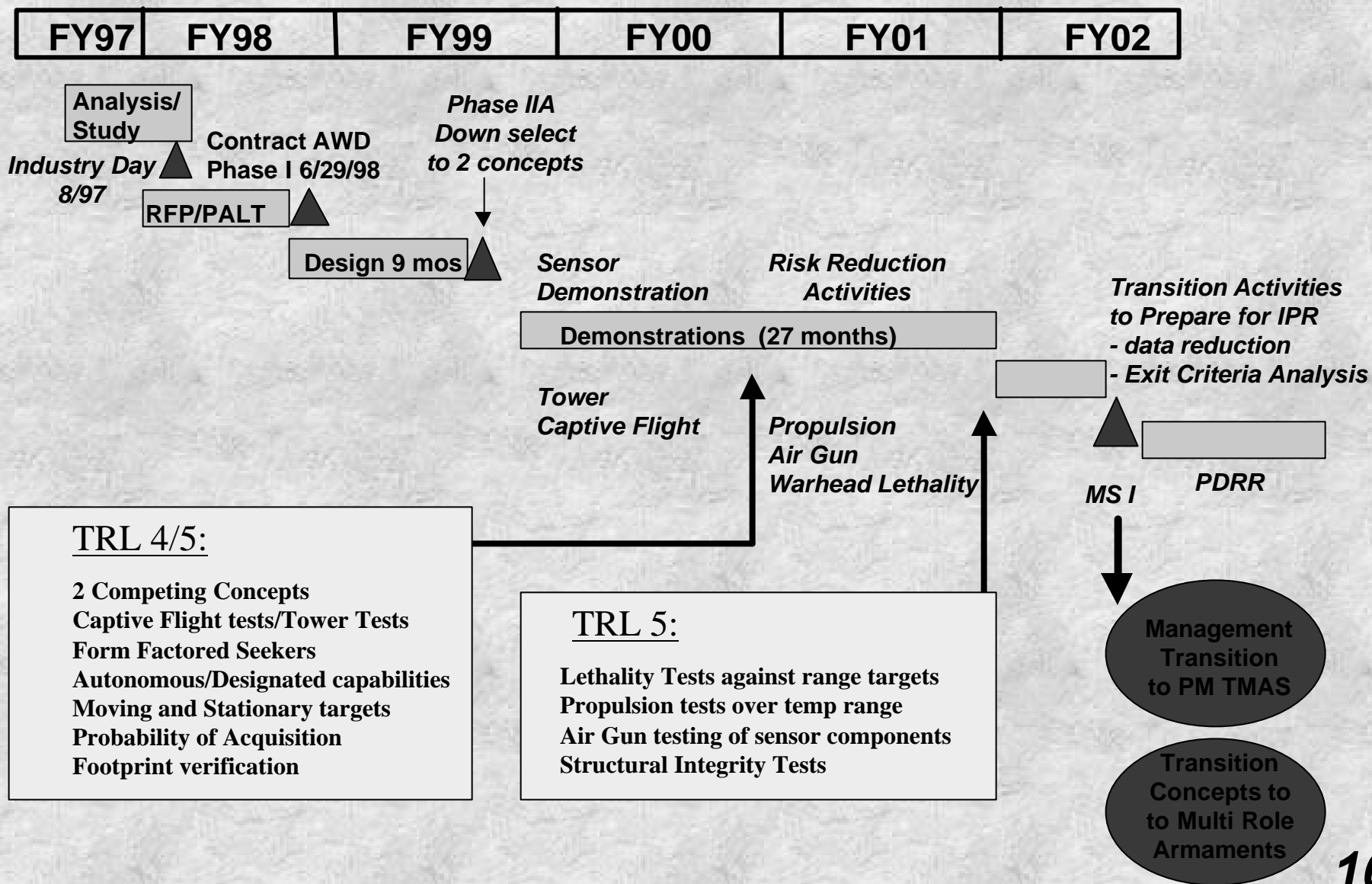


TERM Schedule



Integration
Activities

TERM Program Schedule





TERM STO ACQUISITION STRATEGY



Phase I - System Study/Design Phase (FY98-FY99)

- 9 months
- Three contracts awarded (June 98)
 - Raytheon TI Systems
 - Alliant Defense Electronics
 - Boeing North America



Phase 2A - Sensor Demonstrations (FY99-FY00) Awarded 22 July '99

- 15 months
- Two candidates (Alliant, Raytheon)
- Tower Tests, Captive Flight Tests



Phase 2B - Munition Demonstrations (FY01)

- 12 months
- Two candidates
- Demonstrate MS I Exit Criteria



Transition to PM-TMAS in FY02 for PDRR phase with EMD starting in FY06



CONCLUSIONS



- **The Battalion Battlespace Has Expanded**
- **The Armor Threat Is Real and Increasingly Lethal**
- **Supporting Systems Have More Requirements Than Assets**
- **The Battalion Task Force Must Have an Organic Capability to Engage Fleeting Targets in the 5-10 km Range Band**
- **TERM Provides an Extended Range Munition That Can Meet the Battalion Commander's Need**

